

REMARKS

Applicants, their principal representatives in Germany, and the undersigned have carefully reviewed the first Office Action on the merits in the subject U.S. patent application, together with the prior art cited and relied on by the Examiner in the rejections of the claims. In response, the claims have been amended to more clearly patentably define the subject matter. It is believed that the claims now pending in the application do patentably define the subject invention over the prior art cited and relied on, for the reasons to be set forth subsequently. Reexamination and reconsideration of the application, and allowance of the claims is respectfully requested.

As described in the Substitute Specification, as depicted in the drawings, and as recited in the claims which are currently pending in the subject application, the present invention is directed to a method for affecting a fan-out effect in a web of material, as that web of material is being printed, typically in multiple colors, in a web-fed rotary printing press. It must initially be noted that a fan-out effect is not a registration error. The two are not the same or similar. They have two separate, distinct causes and they are dealt with in two separate, distinct ways.

In a typical web-fed rotary printing press, such as the one depicted in Fig. 1 of the subject application, a web of material is supported by an unreeling device 100, is drawn off the roll on which it is carried by a draw-in device, and is printed, typically in multiple colors, by a plurality of printing units 300. One such printing unit is depicted schematically in Fig. 3. As may be seen, the web B or B¹ passes between a pair of cooperating rollers 303. Since this is an offset printing unit, the rollers 303 are identified as transfer cylinders because they transfer ink images from the forme or plate cylinders 304. These forme or

plate cylinders 304 carry printing plates such as the one depicted at 310 in the plate changing device 307.

Each printing plate 310 is provided with ink from an inking system 305 and is often provided with a dampening fluid from a dampening system 306. The result is that the web of material B or B¹, as it passes between the transfer cylinders 303, is provided with an image of liquid ink, and is also contacted by liquid dampening fluid, typically on both sides. Since the web B or B¹ is usually a porous material, such as newsprint, it absorbs some of the ink and some of the dampening fluid, which is typically water based. As a result of this liquid absorption, and because the web is under tension, it stretches or fans out. Such stretching or fanning out occurs both longitudinally, in the direction of web travel, and laterally in the axial direction of the transfer cylinders and the forme or plate cylinders. As a result of this fan-out effect, a printed image on the web, which has been applied by a first printing unit 300, will typically shift its location, both longitudinally and laterally by the time the web arrives at the next printing unit 300. The Examiner is invited to review the discussion at paragraphs 027, 028 and 029 of the Substitute Specification with respect to the fan-out effect and for a discussion of the use of a device 336 for use in affecting that fan-out effect.

The fan-out affecting device 336 is depicted in Fig. 3 and is typically situated before the printing nip that is defined by the two transfer rollers or cylinders 303 in the printing unit 300. It is to be understood that the printing unit 300 depicted in Fig. 3 is typically not the first printing unit in the series of printing units but instead, as discussed at paragraph 027 of the Substitute Specification, is a second or subsequent printing unit.

As may be seen in Fig. 4, and as discussed in paragraphs 027, 028 and 029 of the

Substitute Specification, the device 336 for affecting the fan-out effect of the web may be at least one support element, that is provided with laterally spaced nozzles 338. These nozzles 338 are used to direct a gas, such as air, against the surface of the web that has been wetted during a previous printing step. The application of the gas by the various nozzles 338 acts to form undulation or corrugations in the web. This has the effect of reducing the lateral width of the web, which has tended to fan out, or to spread laterally because it was wetted during the previous printing step.

As is discussed in paragraphs 028 and 029 of the Substitute Specification, both the positioning of these nozzles, as well as the volume of air flow through each nozzle, and the pressure of that air flow, can be adjusted or varied. Typically, a control device, such as the one depicted at 339 in Fig. 4, is used to regulate the actuating members 338 of the device 336 for affecting the fan-out effect.

As is discussed in paragraph 032 of the Substitute Specification, the actual locations of partial printed image portions of the printed image can be determined by the use of a sensor 341. Such a sensor is depicted schematically in Fig. 5 and extends over at least one quarter of the width of the web being printed. The Examiner is requested to note the discussion at paragraph 047 of the Substitute Specification in this regard. The data from the sensor 341 is directed to a control device 345. That device is also provided with information regarding the nominal or desired positions of the partial print images. Such nominal values can be obtained from a print pre-stage, as indicated at paragraph 032.

The control device 339 is now able to direct the various nozzles 338 to discharge air, at suitable pressure levels and volumes, onto the web B or B¹. This has the effect, as noted above, of causing slight undulations or corrugations in the web. While these are not

readily visible or discernable, they have the desired result of reducing the lateral width of the web, so that the web is returned back to its normal width and the fan-out effect is effecting controlled.

In marked difference, and as will be discussed in connection with the prior art Siler reference, a registration error is the result of plate movement on a plate cylinder, or of different rotational speeds of several cooperating printing cylinders. It is not the same as, or similar to a fan-out effect, which is a physical deformation of the web. In a typical rotary printing press, the plates that are each used to print a portion of a resultant total image, are mounted on the surfaces of plate or forme cylinders. As will be apparent, the plates on a first cylinder have to be positioned, with respect to the plates on a second cylinder, so that when they cooperate to each print their respective portions of a multiple color image, the resulting several partial images will be properly located, with respect to each other. If one plate shifts either laterally or circumferentially, it will apply its image to the web in an improper location. The next printing unit then is out of registration with the first. This registration error is typically corrected by shifting the out of position plate either laterally or circumferentially on its respective cylinder.

Differences in rotational speeds of cylinders in two cooperating printing units can also result in registration errors. If the second printing unit is rotating slightly too quickly or slowly, it will not apply its partial image to the web in the proper location, with respect to the partial image affected by the first printing unit. Again, this is a registration error that can be remedied by proper control of the rotational speeds of the various cylinders.

It is typical that a multiple color image can be reduced in quality by both a fan-out effect and a registration error. The subject application discusses the use of the control

device 342 as being usable to deal with both situations. However, and at the risk of being repetitive, a fan-out effect is not the same as a registration error. The causes of the two are very different and the methods of dealing with them are also very different.

In the first Office Action on the merits of July 17, 2008, the Examiner made the restriction requirement, as set forth in the Office Action of April 9, 2008, final. In response, claims 88-101, 108-121, 123, 125, 127 and 129-133 have been cancelled. Applicants again expressly reserve the right to file one or more divisional patent applications directed to the inventions or groups of inventions not selected for prosecution in this application.

Claims 87, 102, 104-107, 122 and 124 were rejected under 35 USC 102(b) as being anticipated by U.S. published patent application No. 2003/0010235 to Siler. Claim 103 was rejected under 35 USC 103(a) as being unpatentable over Siler in view of U.S. published patent application No. 2004/0163562 to Lewis. Claim 126 was rejected under 35 USC 103(a) as being unpatentable over Siler in view of U.S. patent No. 5,022,950 to Ingalls. Claim 128 was rejected under 35 USC 103(a) as being unpatentable over Siler in view of Invention Registration No. H 1616 to Wolfe.

Turning initially to the rejection of the majority of the claims as being anticipated by the Siler published application, the reasoning applied by the Examiner is factually inaccurate for a number of reasons. Initially, and quite significantly, the Siler publication is direction to a registration system for a printing press (emphasis added). Such a registration system is used to correct registration errors. It is not, as asserted in the Office Action, "...a method for affecting a fan-out effect of a printed image on a web." As it is hoped is now appreciated by the Examiner, in view of the discussion set forth earlier in this Amendment, a fan-out effect is not the same as a registration error. Both cause errors

in the image being printed. Both can be corrected. That does not mean that their causes are the same or even similar.

In the Siler published application, there are shown a plurality of printing stations, each at 20. A web 12 enters at the bottom of this line of printing stations, as depicted in Fig. 1, and passes out of the group of printing stations 20 at the top. It is to be noted, in passing, that the Siler device is not an offset printing device but rather is a direct printing device which is used to impart multiple color images to the web 12 directly from printing rollers 22. Each such printing roller 22 has direct contact with the web 12, which web may be printed on only one side, and which web is described as a cardboard material used for product packaging. Such a cardboard web would not be expected to experience a fan-out effect because it would be too rigid and would not be expected to experience lateral and/or longitudinal shifting or deformation, which give rise to the fan-out effect.

Each of the printing rollers 22 is shown being in cooperating with a separate phase adjustment member 26. The purpose of each such phase adjustment member is, as recited in the first several lines of paragraph 028, "...to allow control of the alignment or phase regulation of the color image printed by the printing station 20 relative to the color images printed by the other printing stations 20." As is discussed in paragraph 029 of the Siler reference, each phase adjustment member 26 is usable to adjust the registration of the printing roller, with which it is associated in two perpendicular directions. One of these is in the direction of web travel and the other is in a direction that is perpendicular to the direction of web travel.

In the Siler device, each printing roller 22 is usable to print a pair of registration marks "...in addition to the image that is to be printed." The Examiner's attention is

directed to paragraph 0030 of Siler for this discussion. An imaging device 30, as seen in Fig. 1 of Siler, is positioned adjacent the web and is used to periodically detect the registration marks printed by the printing rollers.

Starting at paragraph 0032 of Siler, and as depicted in Figs. 2 and 3, the registration marks that are printed by each of the printing rollers 22 are arranged in a registration mark pattern 50, when the web reaches the end of the group of printing stations. Such a registration mark pattern 50 is shown in large scale in Fig. 2 and is shown on the web 12 in Fig. 3. As may be seen quite clearly in Fig. 3, that registration mark pattern 50 is situated outside of the printed image 52 which is formed on the web by the various printing rollers 22.

The Office Action asserts that Siler teaches the step of "...providing image prints of two printed images...", referring to the registration mark pattern 50. It is quite clear that the registration mark pattern 50 is not part of the printed image applied to the web by the plurality of printing stations 20. Instead, as discussed above, and as quite clearly recited in the Siler reference, the reference mark pattern 50 is located outside of the printed image 52 and is not part of the printed image 52.

The sensor 30 is used to periodically detect the registration marks, which have been formed into the registration mark pattern 50. The rejection of claim 87 asserts that the sensor 30 is being used "...the detect image points over at least a quarter of said web width." The Examiner is importing claim language into the Siler reference, in an effort to change the clear disclosure of Siler. There is no reason why the imaging device 30 of Siler would detect image points other than the registration mark pattern 50 which, as is clearly shown in Fig. 3 of Siler, is located at one side of the web and clearly does not have a width

approaching one quarter of the width of the web. The Examiner's assertion that "...image parts are patterned in any method including over entire web," is not supported by any teaching of the Siler reference. The Examiner is reminded that his rejection of claim 87 is based on 35 USC 102(b), with the Siler reference being asserted as anticipating the claim. The statement of the Examiner, with respect to the non-disclosed positioning of the reference marks over the entire web, is clearly not appropriate for a rejection under 35 USC 102(a).

The rejection of claim 87 asserts that the Siler device is provided image data from a print pre-stage, relying on the Abstract of the reference. In fact, the Siler abstract asserts that there is provided a controller that uses registration mark reference data "...defined by a registration mark relationship table." Such a registration mark relationship table is not a print pre-stage. Such a print pre-stage is well understood by one of skill in the art to be the result of a pre-production print proof or reference image that is considered to be correct. It is not a registration mark relationship table. Again, the Examiner is importing claim language into the reference in an attempt to manipulate the reference to fit the rejection.

The rejection of claim 87 asserts that the Siler reference provides "...an actuating member for affect fan-out effect." This is asserted to be the element 26, which is described at paragraph 73 of Siler. In fact, the element 26 is described as a phase adjustment member 26, as set forth starting at paragraph 0028 of the Siler reference. Since Siler is concerned with the correction of registration errors, not with the correction of a fan-out effect, it is not surprising that each of the phase adjustment members 26 is usable to "...allow control of the alignment or phase registration of the color image printed

by the printing station 20 relative to the color images printed by the other printing stations 20," again referring to paragraph 0028 of Siler. The phase adjustment member 26 allows the phase, or rotational portion of each of the printing rollers to be independently adjusted, as set forth at the end of paragraph 0028 of Siler.

The actuating member for affecting a fan-out effect, in accordance with the present invention, is depicted in Figs. 3-5 and is described in detail in the Substitute Specification at paragraphs 027 to 030. It is not associated with any one of the printing cylinders. It includes a support structure with a plurality of nozzles. Its purpose is to form small undulations or corrugations or waviness of the web. The actuating member for affecting the fan-out effect of the web, in accordance with the present invention, does not have anything to do with control or regulation of the phase or the rotational position of each of the printing rollers. The Examiner is again attempting to distort the clear teachings of the reference by his importation, into the rejection, of language from the claims of the subject application and his assertion that the reference shows such method steps when it, in fact, does not.

As is discussed at paragraphs 072 and 073 of the Siler reference, the registration correction values that have been generated at block 136 of the registration routine 100 can be transmitted to the phase adjustment mechanism 26 for the various printing rollers 22. These printing rollers 22 are thus brought back into proper registration. The bringing of the various printing rollers 22 into proper registration is not the same as, or even remotely similar to the use of a plurality of air nozzles to distort the web of material to counteract the lateral widening of the web due to the fan-out effect.

For all of these reasons, it is quite clear that the Siler reference does not anticipate,

or render obvious the present invention, as recited in claim 87, as filed, or even more clearly as amended. The Siler device is directed to the correction of registration errors. It is not directed to the correction of a web fan-out effect. In Siler, the registration of the print images is corrected by controlling the positions and phase relationships of all of the printing rollers. In the subject invention, as recited in claim 27, the actuating member is usable for affecting a fan-out of the web, with that fan-out being an increase in the width of the web as a result of the printing of an image on the web. Allowance of claim 87, as being clearly patentable over the prior art Siler publication, is respectfully requested.

The several claims that depend from believed allowable independent claim 87 are also believed to be allowable. None of the secondary references show or suggest the method for affecting a fan-out effect on a printed image on a web, as recited in claim 87. All of these claims are thus also believed to be allowable.

During a review of the Substitute Specification, in the course of the preparation of the subject Amendment, various minor typographical errors were noted. These are being corrected by the subject Amendment. The correction of these minor errors does not constitute any new matter. The entry of these corrections is respectfully requested.

SUMMARY

The Substitute Specification has been amended to correct minor typographical errors, without the presentation of any new matter. The claims withdrawn from consideration by the Examiner have been cancelled. Independent claim 87 has been amended to more clearly patentably define the subject invention over the prior art cited and relied on. The rest of the claims now pending in the application depend from believed patentable claim 87. Allowance of the claims, and passage of the application to issue, is respectfully requested.

Respectfully submitted,

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